

Re-examining the binding conditions of Mandarin anaphor *ziji* in the light of inanimacy

1- Goal - The goal of this paper is to establish the existence of inanimate *ziji* and use it as a tool for re-examining the binding conditions of Mandarin anaphors (see Charneval and Sportiche's 2016 inanimacy strategy). In particular, some specific properties standardly attributed to *ziji*, such as subject orientation or sensitivity to sub-command (Tang 1989, a.o.), could either be an artefact of logophoricity or intrinsic properties of *ziji*. The examination of inanimate *ziji*, which cannot be logophoric as it lacks a mental state, allows us to shed new light on these issues.

2- Binding properties of *ziji*

a) Binding domain - Like other anaphors (Icelandic *sig*, see Maling 1984, a.o.; English *himself*, see Pollard & Sag 1992, a.o.; French *son propre*, see Charneval & Sportiche 2016, a.o.), the binding behavior of *ziji* is complicated by its sensitivity to logophoricity: *ziji* is exempt from Condition A when logophorically interpreted, i.e. when anteceded by a perspective center (Huang & Liu 2001, a.o., who refute the hypothesis that *ziji* is a long distance anaphor, cf. Cole *et al.* 1990, a.o.). Given that the criteria for logophoricity remain unclear, it is difficult to determine the binding domain of *ziji*. The compound anaphor *ta-ziji* has been used instead to this end, because unlike *ziji*, it is standardly considered as a strictly local anaphor based on examples like (1) (Huang & Tang 1991).

(1) *Zhangsan_i renwei Lisi_k hai-le {ziji_{i/k} / ta-ziji_{i/k}}.* 'Zhangsan_i thought that Lisi_k hurt him_{i/k}.'

In particular, the *ta-ziji* diagnostic shows that the subject position of an embedded clause counts as local as shown in (2) (Huang *et al.* 2009); this is predicted by Chomsky (1986), but not by Charneval & Sportiche (2016) who claim that a (French) anaphor must be bound within its smallest TP.

(2) *Zhangsan_i zong yiwei ta-ziji_i zui liaobuqi.* 'Zhangsan_i always thinks he_i is the greatest.'

However, Pan (1998) shows that *ta-ziji* can in fact be long distance bound just like *ziji*, if there is no intervening animate as in (3) (see also Dillon *et al.* 2015); Pan further argues that long distance *ta-ziji* need not be contrastive, and is therefore not an instance of the intensifier *ta-ziji*.

(3) *Zhangsan_i shuo naben shu fang zai ta-ziji_i de jiali.* 'Zhangsan_i said that book was put at his_i home.'

This questions the definition of the binding domain of Mandarin anaphors, since both *ta-ziji* and *ziji* can in fact escape Condition A, presumably under perspectival conditions that are not well defined.

b) Sub-command - Moreover, *ziji* (and *ta-ziji*) is claimed to exhibit a specific property as compared to other anaphors: the antecedent can sub-command it, i.e. it does not have to c-command *ziji*, but can be the specifier of a larger DP that does, if that DP is inanimate (Tang 1989, Huang & Liu 2001, a.o.).

(4) [*Zhangsan_i de jiao 'ao*] *hai-le ziji_i.* 'Zhangsan_i's arrogance harmed him_i.'

But it is not clear whether *ziji* is indeed sub-commanded by *Zhangsan* in (4) - thus following a version of Condition A specific to Mandarin - or whether *ziji* is exempt from Condition A because the noun *arrogance* makes *Zhangsan* a perspective center in referring to his mental state.

c) Subject orientation - Another purported property of *ziji* - allegedly shared with other anaphors like Icelandic *sig* - is that it must be anteceded by a subject, as illustrated in (5) (Huang *et al.* 2009).

(5) *Zhangsan_i yijing tongzhi Lisi_j ziji_{i/*j}-de fenshu le.* 'Zhangsan_i already told Lisi_j his_{i/*j} grade.'

But examples like (6) (as well as the possibility of sub-command) challenge this claim: the apparent subject orientation of *ziji* could in fact be due to the fact that logophoric centers are usually subjects.

(6) *Ziji_i-de xiaohai mei de jiang de xiaoxi shi Lisi_i hen shangxin.*

'The news that his_i child didn't win the prize made Lisi_i very sad.' (Huang & Liu 2001)

Given that inanimates lack a mental state, all these properties can crucially be examined independently of logophoricity by studying inanimate *ziji*: this is the goal of our experimental study.

3 - Our experimental study of inanimate *ziji*

To investigate the behavior of inanimate *ziji* (excluding near animates like *company* or *supermarket*), we set up an online questionnaire on Qualtrics: 56 native speakers of Mandarin were asked to provide grammaticality judgments about 48 sentences on a Likert scale from 1 (unnatural) to 6 (natural). We manipulated both (i) the distance between the antecedent and the anaphor, and (ii) the structural relation between the antecedent and the anaphor, by varying the position of the antecedent [(a) (within) subject; (b) (within) object] and the position of the anaphor [(a) (within) object of the same clause; (b) (within) subject of a subordinate clause; (c) (within) object of a subordinate clause].

4 - Results and theoretical consequences - Our survey first demonstrates that the reflexive *ziji* can be inanimate as in (7) (the score out of 6 is indicated in brackets) contrary to the standard claim that the anaphor *ziji* (vs. the intensifier *ziji*) is only animate (see Tang 1989, a.o.).

(7) [*Zhe ge shengwu xitong*]_i neng zhichi ziji_i de nengliang gongji. [5.12]
'[This biological system]_i can support its_i own energy supply.'

a) Subject orientation - Our results also confirm the subject orientation of *ziji* independently of logophoricity: the contrast between the scores in the subject condition (mean=4.37) illustrated in (7) and in the object condition exemplified in (8) (mean=1.78) is significant (p<0.001). This means that non-logophoric *ziji* has to be anteceded by a subject, but logophoric *ziji* does not have to, as in (6).

(8) **Zhangsan cuo ba wenzhang*_i fagei le ziji_i de zuozhe. [2.12]
'Zhangsan sent [the article]_i to its_i own author by mistake.'

b) Subcommand - The study also shows that there is a significant difference (p<0.001) between a commanding antecedent as in (7) and a sub-commanding antecedent as in (9) (mean=3.37).

(9) **[Zhe ke shu]*_i de guoshi ya wan le ziji_i. 'The fruits of [this tree]_i bent it_i.' [3.20]

This strongly suggests that subcommand is in fact an artefact of logophoricity: Zhangsan can antecede *ziji* in (4) not because it sub-commands it, but because it is logophoric and thus exempts *ziji* from Condition A. This also explains why (10) is deviant: *ziji* is not logophoric since *failure* (vs. *arrogance* in 4) does not make reference to the antecedent's mental state. Moreover, the allegedly required inanimacy of the sub-commanding DP follows: an animate DP (e.g. *Zhangsan's mother* vs. *Zhangsan's arrogance*) is an intervening logophoric center (cf. Xue *et al* 1994).

(10) **Zhangsan*_i de shibai biaoshi tamen dui ziji_i mei xinxin.
'Zhangsan_i's failure indicates that they have no confidence in him_i.' (Huang & Liu 2001)

c) Binding domain - Finally, our results show that *ziji* anteceded by a matrix subject behaves like a locally bound anaphor when it is within the subject of an embedded clause as in (11) (mean=3.94), but not when it is within its object as in (12) (mean=2.09): while the difference between these two conditions is significant (p<0.001), that between the conditions in (11) and in (7) is not (p=0.13).

(11) [*Zhe xiang yanjiu*]_i jiashe ziji_i de jieguo buhui dui huanjing zaocheng fumian yingxiang. [4.46]
'[This research]_i assumes that its_i own result won't make negative influence on the environment.'

(12) **[Zhe ba sunhui de suo]*_i zhengming youren qitu qiao kai ziji_i. [1.79]
'[This broken lock]_i proves that somebody tried to pry into it_i.'

This seems to support Chomsky's (1986) theory over Charneval & Sportiche (2016)'s. Another possibility is to suppose that subjects in Mandarin occupy a higher position in the left periphery than in French so that an embedded subject in Mandarin (vs. French) belongs to the domain of a matrix subject. A sentence like (13) (Huang & Tang 1991) could hint that topic is a possible candidate for that position, since the allegedly local anaphor *ta-ziji* is acceptable in that position when anteceded by the matrix subject. But the long distance behavior of *ta-ziji* in sentences like (3) and the unacceptability of topicalized inanimate *ziji* in (14) question this hypothesis and call for further research on this issue.

(13) *Zhangsan*_i shuo, *ta-ziji*_i, *Lisi* chang piping. 'Zhangsan_i said that himself_i, Lisi often criticized.'

(14) **[Zhe ba sunhui de suo]*_i zhengming ziji_i, youren qitu qiao kai.
'*[This broken lock]_i proves that itself_i, somebody tried to pry into.'

In sum, our experimental study shows that inanimate *ziji* can be used as a new tool for investigating the binding conditions of *ziji*. Its behavior confirms the standardly assumed binding domain of *ziji* (in particular, Tensed-S Condition can be violated in Mandarin) and reveals that subcommand is an artefact of logophoricity while subject orientation is independent from it.

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